SEQUENCE LISTING

<110> Baron, M.
Farrington, S.
Belaussoff, M.

<120> METHODS FOR MODULATING HEMATOPOIESIS AND VASCULAR GROWTH

<130> HUIP-P01-060

<140> 09/021,660
<141> 1998-02-10

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<170> PatentIn Ver. 2.1

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 1               5                  10                  15

tgc gct ctt tta gtc tcc tct ggg ctg act tgt gga cca ggc agg ggc   96
Cys Ala Leu Leu Val Ser Ser Gly Leu Thr Cys Gly Pro Gly Arg Gly
            20                  25                  30

att gga aaa agg agg cac ccc aaa aag ctg acc ccg tta gcc tat aag  144
Ile Gly Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys
        35                  40                  45

cag ttt att ccc aat gtg gca gag aag acc cta ggg gcc agt gga aga  192
Gln Phe Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg
    50                  55                  60

tat gaa ggg aag atc aca aga aac tcc gag aga ttt aaa gaa cta acc  240
Tyr Glu Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr
65                  70                  75                  80

cca aat tac aac cct gac att att ttt aag gat gaa gag aac acg gga  288
Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly
                85                  90                  95

gct gac aga ctg atg act cag cgc tgc aag gac aag ctg aat gcc ctg  336
Ala Asp Arg Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu
            100                 105                 110

gcg atc tcg gtg atg aac cag tgg ccc ggg gtg aag ctg cgg gtg acc  384
Ala Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr
        115                 120                 125

gag ggc tgg gac gag gat ggc cat cac tcc gag gaa tcg ctg cac tac  432
Glu Gly Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr
    130                 135                 140

gag ggt cgc gcc gtg gac atc acc acg tcg gat cgg gac cgc agc aag  480
Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys
145                 150                 155                 160

tac gga atg ctg gcc cgc ctc gcc gtc gag gcc ggc ttc gac tgg gtc  528
Tyr Gly Met Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val
                165                 170                 175

tac tac gag tcc aag gcg cac atc cac tgc tcc gtc aaa gca gaa aac  576
Tyr Tyr Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn
            180                 185                 190

tca gtg gca gcg aaa tca gga ggc tgc ttc cct ggc tca gcc aca gtg  624
Ser Val Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val
        195                 200                 205

cac ctg gag cat gga ggc acc aag ctg gtg aag gac ctg agc cct ggg  672
His Leu Glu His Gly Gly Thr Lys Leu Val Lys Asp Leu Ser Pro Gly
    210                 215                 220
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gac cgc gtg ctg gct gct gac gcg gac ggc cgg ctg ctc tac agt gac   720
Asp Arg Val Leu Ala Ala Asp Ala Asp Gly Arg Leu Leu Tyr Ser Asp
225                 230                 235                 240

ttc ctc acc ttc ctc gac cgg atg gac agc tcc cga aag ctc ttc tac   768
Phe Leu Thr Phe Leu Asp Arg Met Asp Ser Ser Arg Lys Leu Phe Tyr
                245                 250                 255

gtc atc gag acg cgg cag ccc cgg gcc cgg ctg cta ctg acg gcg gcc   816
Val Ile Glu Thr Arg Gln Pro Arg Ala Arg Leu Leu Leu Thr Ala Ala
            260                 265                 270

cac ctg ctc ttt gtg gcc ccc cag cac aac cag tcg gag gcc aca ggg   864
His Leu Leu Phe Val Ala Pro Gln His Asn Gln Ser Glu Ala Thr Gly
        275                 280                 285

tcc acc agt ggc cag gcg ctc ttc gcc agc aac gtg aag cct ggc caa   912
Ser Thr Ser Gly Gln Ala Leu Phe Ala Ser Asn Val Lys Pro Gly Gln
    290                 295                 300

cgt gtc tat gtg ctg ggc gag ggc ggg cag cag ctg ctg ccg gcg tct   960
Arg Val Tyr Val Leu Gly Glu Gly Gly Gln Gln Leu Leu Pro Ala Ser
305                 310                 315                 320

gtc cac agc gtc tca ttg cgg gag gag gcg tcc gga gcc tac gcc cca   1008
Val His Ser Val Ser Leu Arg Glu Glu Ala Ser Gly Ala Tyr Ala Pro
                325                 330                 335

ctc acc gcc cag ggc acc atc ctc atc aac cgg gtg ttg gcc tcc tgc   1056
Leu Thr Ala Gln Gly Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys
            340                 345                 350

tac gcc gtc atc gag gag cac agt tgg gcc cat tgg gcc ttc gca cca   1104
Tyr Ala Val Ile Glu Glu His Ser Trp Ala His Trp Ala Phe Ala Pro
        355                 360                 365

ttc cgc ttg gct cag ggg ctg ctg gcc gcc ctc tgc cca gat ggg gcc   1152
Phe Arg Leu Ala Gln Gly Leu Leu Ala Ala Leu Cys Pro Asp Gly Ala
    370                 375                 380

atc cct act gcc gcc acc acc acc act ggc atc cat tgg tac tca cgg   1200
Ile Pro Thr Ala Ala Thr Thr Thr Thr Gly Ile His Trp Tyr Ser Arg
385                 390                 395                 400

ctc ctc tac cgc atc ggc agc tgg gtg ctg gat ggt gac gcg ctg cat   1248
Leu Leu Tyr Arg Ile Gly Ser Trp Val Leu Asp Gly Asp Ala Leu His
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ccg ctg ggc atg gtg gca ccg gcc agc tga                           1278
Pro Leu Gly Met Val Ala Pro Ala Ser
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<222> (1)..(1188)

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  1               5                  10                  15

gca cta tct gcc cag agc tgc ggg ccg ggc cga gga ccg gtt ggc cgg   96
Ala Leu Ser Ala Gln Ser Cys Gly Pro Gly Arg Gly Pro Val Gly Arg
            20                  25                  30

cgg cgt tat gtg cgc aag caa ctt gtg cct ctg cta tac aag cag ttt   144
Arg Arg Tyr Val Arg Lys Gln Leu Val Pro Leu Leu Tyr Lys Gln Phe
        35                  40                  45

gtg ccc agt atg ccc gag cgg acc ctg ggc gcg agt ggg cca gcg gag   192
Val Pro Ser Met Pro Glu Arg Thr Leu Gly Ala Ser Gly Pro Ala Glu
    50                  55                  60

ggg agg gta aca agg ggg tcg gag cgc ttc cgg gac ctc gta ccc aac   240
Gly Arg Val Thr Arg Gly Ser Glu Arg Phe Arg Asp Leu Val Pro Asn
65                  70                  75                  80

tac aac ccc gac ata atc ttc aag gat gag gag aac agc ggc gca gac   288
Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Ser Gly Ala Asp
                85                  90                  95

cgc ctg atg aca gag cgt tgc aaa gag cgg gtg aac gct cta gcc atc   336
Arg Leu Met Thr Glu Arg Cys Lys Glu Arg Val Asn Ala Leu Ala Ile
            100                 105                 110

gcg gtg atg aac atg tgg ccc gga gta cgc cta cgt gtg act gaa ggc   384
Ala Val Met Asn Met Trp Pro Gly Val Arg Leu Arg Val Thr Glu Gly
        115                 120                 125

tgg gac gag gac ggc cac cac gca cag gat tca ctc cac tac gaa ggc   432
Trp Asp Glu Asp Gly His His Ala Gln Asp Ser Leu His Tyr Glu Gly
    130                 135                 140

cgt gcc ttg gac atc acc acg tct gac cgt gac cgt aat aag tat ggt   480
Arg Ala Leu Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys Tyr Gly
145                 150                 155                 160

ttg ttg gcg cgc cta gct gtg gaa gcc gga ttc gac tgg gtc tac tac   528
Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
                165                 170                 175

gag tcc cgc aac cac atc cac gta tcg gtc aaa gct gat aac tca ctg   576
Glu Ser Arg Asn His Ile His Val Ser Val Lys Ala Asp Asn Ser Leu
            180                 185                 190

gcg gtc cga gcc gga ggc tgc ttt ccg gga aat gcc acg gtg cgc ttg   624
Ala Val Arg Ala Gly Gly Cys Phe Pro Gly Asn Ala Thr Val Arg Leu
        195                 200                 205
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cgg agc ggc gaa cgg aag ggg ctg agg gaa cta cat cgt ggt gac tgg   672
Arg Ser Gly Glu Arg Lys Gly Leu Arg Glu Leu His Arg Gly Asp Trp
    210                 215                 220

gta ctg gcc gct gat gca gcg ggc cga gtg gta ccc acg cca gtg ctg   720
Val Leu Ala Ala Asp Ala Ala Gly Arg Val Val Pro Thr Pro Val Leu
225                 230                 235                 240

ctc ttc ctg gac cgg gat ctg cag cgc cgc gcc tcg ttc gtg gct gtg   768
Leu Phe Leu Asp Arg Asp Leu Gln Arg Arg Ala Ser Phe Val Ala Val
                245                 250                 255

gag acc gag cgg cct ccg cgc aaa ctg ttg ctc aca ccc tgg cat ctg   816
Glu Thr Glu Arg Pro Pro Arg Lys Leu Leu Leu Thr Pro Trp His Leu
            260                 265                 270

gtg ttc gct gct cgc ggg cca gcg cct gct cca ggt gac ttt gca ccg   864
Val Phe Ala Ala Arg Gly Pro Ala Pro Ala Pro Gly Asp Phe Ala Pro
        275                 280                 285

gtg ttc gcg cgc cgc tta cgt gct ggc gac tcg gtg ctg gct ccc ggc   912
Val Phe Ala Arg Arg Leu Arg Ala Gly Asp Ser Val Leu Ala Pro Gly
    290                 295                 300

ggg gac gcg ctc cag ccg gcg cgc gta gcc cgc gtg gcg cgc gag gaa   960
Gly Asp Ala Leu Gln Pro Ala Arg Val Ala Arg Val Ala Arg Glu Glu
305                 310                 315                 320

gcc gtg ggc gtg ttc gca ccg ctc act gcg cac ggg acg ctg ctg gtc   1008
Ala Val Gly Val Phe Ala Pro Leu Thr Ala His Gly Thr Leu Leu Val
                325                 330                 335

aac gac gtc ctc gcc tcc tgc tac gcg gtt cta gag agt cac cag tgg   1056
Asn Asp Val Leu Ala Ser Cys Tyr Ala Val Leu Glu Ser His Gln Trp
            340                 345                 350

gcc cac cgc gcc ttc gcc cct ttg cgg ctg ctg cac gcg ctc ggg gct   1104
Ala His Arg Ala Phe Ala Pro Leu Arg Leu Leu His Ala Leu Gly Ala
        355                 360                 365

ctg ctc cct ggg ggt gca gtc cag ccg act ggc atg cat tgg tac tct   1152
Leu Leu Pro Gly Gly Ala Val Gln Pro Thr Gly Met His Trp Tyr Ser
    370                 375                 380

cgc ctc ctt tac cgc ttg gcc gag gag tta atg ggc tga               1191
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aag gac gag gag aac acg ggt gcc gac cgc ctc atg acc cag cgc tgc   96
Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg Leu Met Thr Gln Arg Cys
            20                  25                  30

aag gac cgt ctg aac tca ctg gcc atc tct gtc atg aac cag tgg cct  144
Lys Asp Arg Leu Asn Ser Leu Ala Ile Ser Val Met Asn Gln Trp Pro
        35                  40                  45

ggt gtg aaa ctg cgg gtg acc gaa ggc tgg gat gaa gat ggc cat cac  192
Gly Val Lys Leu Arg Val Thr Glu Gly Trp Asp Glu Asp Gly His His
    50                  55                  60

tca gag gag tct tta cac tat gag ggc cgc gcg gtg gat atc acc acc  240
Ser Glu Glu Ser Leu His Tyr Glu Gly Arg Ala Val Asp Ile Thr Thr
65                  70                  75                  80

tca gac cgt gac cga aat aag tat gga ctg ctg gcg cgc tta gca gtg  288
Ser Asp Arg Asp Arg Asn Lys Tyr Gly Leu Leu Ala Arg Leu Ala Val
                85                  90                  95

gag gcc ggc ttc gac tgg gtg tat tac gag tcc aag gcc cac gtg cat  336
Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu Ser Lys Ala His Val His
            100                 105                 110

tgc tct gtc aag tct gag cat tcg gcc gct gcc aag aca ggt ggc tgc  384
Cys Ser Val Lys Ser Glu His Ser Ala Ala Ala Lys Thr Gly Gly Cys
        115                 120                 125

ttt cct gcc gga gcc cag gtg cgc cta gag aac ggg gag cgt gtg gcc  432
Phe Pro Ala Gly Ala Gln Val Arg Leu Glu Asn Gly Glu Arg Val Ala
    130                 135                 140

ctg tca gct gta aag cca gga gac cgg gtg ctg gcc atg ggg gag gat  480
Leu Ser Ala Val Lys Pro Gly Asp Arg Val Leu Ala Met Gly Glu Asp
145                 150                 155                 160

ggg acc ccc acc ttc agt gat gtg ctt att ttc ctg gac cgc gag cca  528
Gly Thr Pro Thr Phe Ser Asp Val Leu Ile Phe Leu Asp Arg Glu Pro
                165                 170                 175

aac cgg ctg aga gct ttc cag gtc atc gag act cag gat cct ccg cgt  576
Asn Arg Leu Arg Ala Phe Gln Val Ile Glu Thr Gln Asp Pro Pro Arg
            180                 185                 190

cgg ctg gcg ctc acg cct gcc cac ctg ctc ttc att gcg gac aat cat  624
Arg Leu Ala Leu Thr Pro Ala His Leu Leu Phe Ile Ala Asp Asn His
        195                 200                 205

aca gaa cca gca gcc cac ttc cgg gcc aca ttt gcc agc cat gtg caa  672
Thr Glu Pro Ala Ala His Phe Arg Ala Thr Phe Ala Ser His Val Gln
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    210                 215                 220

cca ggc caa tat gtg ctg gta tca ggg gta cca ggc ctc cag cct gct   720
Pro Gly Gln Tyr Val Leu Val Ser Gly Val Pro Gly Leu Gln Pro Ala
225                 230                 235                 240

cgg gtg gca gct gtc tcc acc cac gtg gcc ctt ggg tcc tat gct cct   768
Arg Val Ala Ala Val Ser Thr His Val Ala Leu Gly Ser Tyr Ala Pro
                245                 250                 255

ctc aca agg cat ggg aca ctt gtg gtg gag gat gtg gtg gcc tcc tgc   816
Leu Thr Arg His Gly Thr Leu Val Val Glu Asp Val Val Ala Ser Cys
            260                 265                 270

ttt gca gct gtg gct gac cac cat ctg gct cag ttg gcc ttc tgg ccc   864
Phe Ala Ala Val Ala Asp His His Leu Ala Gln Leu Ala Phe Trp Pro
        275                 280                 285

ctg cga ctg ttt ccc agt ttg gca tgg ggc agc tgg acc cca agt gag   912
Leu Arg Leu Phe Pro Ser Leu Ala Trp Gly Ser Trp Thr Pro Ser Glu
    290                 295                 300

ggt gtt cac tgg tac cct cag atg ctc tac cgc ctg ggg cgt ctc ttg   960
Gly Val His Trp Tyr Pro Gln Met Leu Tyr Arg Leu Gly Arg Leu Leu
305                 310                 315                 320

cta gaa gag agc acc ttc cat cca ctg ggc atg tct ggg gca gga agc   1008
Leu Glu Glu Ser Thr Phe His Pro Leu Gly Met Ser Gly Ala Gly Ser
                325                 330                 335

tgaagggact ctaaccactg ccctcctgga actgctgtgc gtggatcc              1056

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  1               5                  10                  15

ctg ctg gtg tgc ccc ggg ctg gcc tgt ggg ccc ggc agg ggg ttt gga   96
Leu Leu Val Cys Pro Gly Leu Ala Cys Gly Pro Gly Arg Gly Phe Gly
            20                  25                  30

aag agg cgg cac ccc aaa aag ctg acc cct tta gcc tac aag cag ttt   144
Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe
        35                  40                  45

att ccc aac gta gcc gag aag acc cta ggg gcc agc ggc aga tat gaa   192
Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu
    50                  55                  60
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ggg aag atc aca aga aac tcc gaa cga ttt aag gaa ctc acc ccc aat   240
Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn
 65                  70                  75                  80

tac aac ccc gac atc ata ttt aag gat gag gaa aac acg gga gca gac   288
Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp
                 85                  90                  95

cgg ctg atg act cag agg tgc aaa gac aag tta aat gcc ttg gcc atc   336
Arg Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu Ala Ile
            100                 105                 110

tct gtg atg aac cag tgg cct gga gtg aag ctg cga gtg acc gag ggc   384
Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly
        115                 120                 125

tgg gat gag gac ggc cat cat tca gag gag tct cta cac tat gag ggt   432
Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu Gly
    130                 135                 140

cga gca gtg gac atc acc acg tcc gac cgg gac cgc agc aag tac ggc   480
Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys Tyr Gly
145                 150                 155                 160

atg ctg gct cgc ctg gct gtg gaa gca ggt ttc gac tgg gtc tac tat   528
Met Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
                165                 170                 175

gaa tcc aaa gct cac atc cac tgt tct gtg aaa gca gag aac tcc gtg   576
Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val
            180                 185                 190

gcg gcc aaa tcc ggc ggc tgt ttc ccg gga tcc gcc acc gtg cac ctg   624
Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val His Leu
        195                 200                 205

gag cag ggc ggc acc aag ctg gtg aag gac tta cgt ccc gga gac cgc   672
Glu Gln Gly Gly Thr Lys Leu Val Lys Asp Leu Arg Pro Gly Asp Arg
    210                 215                 220

gtg ctg gcg gct gac gac cag ggc cgg ctg ctg tac agc gac ttc ctc   720
Val Leu Ala Ala Asp Asp Gln Gly Arg Leu Leu Tyr Ser Asp Phe Leu
225                 230                 235                 240

acc ttc ctg gac cgc gac gaa ggc gcc aag aag gtc ttc tac gtg atc   768
Thr Phe Leu Asp Arg Asp Glu Gly Ala Lys Lys Val Phe Tyr Val Ile
                245                 250                 255

gag acg ctg gag ccg cgc gag cgc ctg ctg ctc acc gcc gcg cac ctg   816
Glu Thr Leu Glu Pro Arg Glu Arg Leu Leu Leu Thr Ala Ala His Leu
            260                 265                 270

ctc ttc gtg gcg ccg cac aac gac tcg ggg ccc acg ccc ggg cca agc   864
Leu Phe Val Ala Pro His Asn Asp Ser Gly Pro Thr Pro Gly Pro Ser
        275                 280                 285
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gcg ctc ttt gcc agc cgc gtg cgc ccc ggg cag cgc gtg tac gtg gtg   912
Ala Leu Phe Ala Ser Arg Val Arg Pro Gly Gln Arg Val Tyr Val Val
    290                 295                 300

gct gaa cgc ggc ggg gac cgc cgg ctg ctg ccc gcc gcg gtg cac agc   960
Ala Glu Arg Gly Gly Asp Arg Arg Leu Leu Pro Ala Ala Val His Ser
305                 310                 315                 320

gtg acg ctg cga gag gag gag gcg ggc gcg tac gcg ccg ctc acg gcg  1008
Val Thr Leu Arg Glu Glu Glu Ala Gly Ala Tyr Ala Pro Leu Thr Ala
                325                 330                 335

cac ggc acc att ctc atc aac cgg gtg ctc gcc tcg tgc tac gct gtc  1056
His Gly Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys Tyr Ala Val
            340                 345                 350

atc gag gag cac agc tgg gca cac cgg gcc ttc gcg cct ttc cgc ctg  1104
Ile Glu Glu His Ser Trp Ala His Arg Ala Phe Ala Pro Phe Arg Leu
        355                 360                 365

gcg cac gcg ctg ctg gcc gcg ctg gca ccc gcc cgc acg gac ggc ggg  1152
Ala His Ala Leu Leu Ala Ala Leu Ala Pro Ala Arg Thr Asp Gly Gly
    370                 375                 380

ggc ggg ggc agc atc cct gca gcg caa tct gca acg gaa gcg agg ggc  1200
Gly Gly Gly Ser Ile Pro Ala Ala Gln Ser Ala Thr Glu Ala Arg Gly
385                 390                 395                 400

gcg gag ccg act gcg ggc atc cac tgg tac tcg cag ctg ctc tac cac  1248
Ala Glu Pro Thr Ala Gly Ile His Trp Tyr Ser Gln Leu Leu Tyr His
                405                 410                 415

att ggc acc tgg ctg ttg gac agc gag acc atg cat ccc ttg gga atg  1296
Ile Gly Thr Trp Leu Leu Asp Ser Glu Thr Met His Pro Leu Gly Met
            420                 425                 430

gcg gtc aag tcc agc tga                                         1314
Ala Val Lys Ser Ser
        435
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<210> 31
<211> 1257
<212> DNA
<213> Brachydanio rerio

<220>
<221> CDS
<222> (1)..(1254)

<400> 31

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atg cgg ctt ttg acg aga gtg ctg ctg gtg tct ctt ctc act ctg tcc   48
Met Arg Leu Leu Thr Arg Val Leu Leu Val Ser Leu Leu Thr Leu Ser
  1               5                  10                  15

ttg gtg gtg tcc gga ctg gcc tgc ggt cct ggc aga ggc tac ggc aga   96
Leu Val Val Ser Gly Leu Ala Cys Gly Pro Gly Arg Gly Tyr Gly Arg
             20                  25                  30
```

```
aga aga cat ccg aag aag ctg aca cct ctc gcc tac aag cag ttc ata   144
Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe Ile
        35                  40                  45

cct aat gtc gcg gag aag acc tta ggg gcc agc ggc aga tac gag ggc   192
Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu Gly
     50                  55                  60

aag ata acg cgc aat tcg gag aga ttt aaa gaa ctt act cca aat tac   240
Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr
 65                  70                  75                  80

aat ccc gac att atc ttt aag gat gag gag aac acg gga gcg gac agg   288
Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg
                85                  90                  95

ctc atg aca cag aga tgc aaa gac aag ctg aac tcg ctg gcc atc tct   336
Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ser Leu Ala Ile Ser
            100                 105                 110

gta atg aac cac tgg cca ggg gtt aag ctg cgt gtg aca gag ggc tgg   384
Val Met Asn His Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly Trp
        115                 120                 125

gat gag gac ggt cac cat ttt gaa gaa tca ctc cac tac gag gga aga   432
Asp Glu Asp Gly His His Phe Glu Glu Ser Leu His Tyr Glu Gly Arg
    130                 135                 140

gct gtt gat att acc acc tct gac cga gac aag agc aaa tac ggg aca   480
Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Lys Ser Lys Tyr Gly Thr
145                 150                 155                 160

ctg tct cgc cta gct gtg gag gct gga ttt gac tgg gtc tat tac gag   528
Leu Ser Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu
                165                 170                 175

tcc aaa gcc cac att cat tgc tct gtc aaa gca gaa aat tcg gtt gct   576
Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val Ala
            180                 185                 190

gcg aaa tct ggg ggc tgt ttc cca ggt tcg gct ctg gtc tcg ctc cag   624
Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Leu Val Ser Leu Gln
        195                 200                 205

gac gga gga cag aag gcc gtg aag gac ctg aac ccc gga gac aag gtg   672
Asp Gly Gly Gln Lys Ala Val Lys Asp Leu Asn Pro Gly Asp Lys Val
    210                 215                 220

ctg gcg gca gac agc gcg gga aac ctg gtg ttc agc gac ttc atc atg   720
Leu Ala Ala Asp Ser Ala Gly Asn Leu Val Phe Ser Asp Phe Ile Met
225                 230                 235                 240

ttc aca gac cga gac tcc acg acg cga cgt gtg ttt tac gtc ata gaa   768
Phe Thr Asp Arg Asp Ser Thr Thr Arg Arg Val Phe Tyr Val Ile Glu
                245                 250                 255
```

E

```
acg caa gaa ccc gtt gaa aag atc acc ctc acc gcc gct cac ctc ctt   816
Thr Gln Glu Pro Val Glu Lys Ile Thr Leu Thr Ala Ala His Leu Leu
            260                 265                 270

ttt gtc ctc gac aac tca acg gaa gat ctc cac acc atg acc gcc gcg   864
Phe Val Leu Asp Asn Ser Thr Glu Asp Leu His Thr Met Thr Ala Ala
        275                 280                 285

tat gcc agc agt gtc aga gcc gga caa aag gtg atg gtt gtt gat gat   912
Tyr Ala Ser Ser Val Arg Ala Gly Gln Lys Val Met Val Val Asp Asp
    290                 295                 300

agc ggt cag ctt aaa tct gtc atc gtg cag cgg ata tac acg gag gag   960
Ser Gly Gln Leu Lys Ser Val Ile Val Gln Arg Ile Tyr Thr Glu Glu
305                 310                 315                 320

cag cgg ggc tcg ttc gca cca gtg act gca cat ggg acc att gtg gtc   1008
Gln Arg Gly Ser Phe Ala Pro Val Thr Ala His Gly Thr Ile Val Val
                325                 330                 335

gac aga ata ctg gcg tcc tgt tac gcc gta ata gag gac cag ggg ctt   1056
Asp Arg Ile Leu Ala Ser Cys Tyr Ala Val Ile Glu Asp Gln Gly Leu
            340                 345                 350

gcg cat ttg gcc ttc gcg ccc gcc agg ctc tat tat tac gtg tca tca   1104
Ala His Leu Ala Phe Ala Pro Ala Arg Leu Tyr Tyr Tyr Val Ser Ser
        355                 360                 365

ttc ctg ttc ccc caa aac tcc agc agt cgg tcc aat gcg act tta caa   1152
Phe Leu Phe Pro Gln Asn Ser Ser Ser Arg Ser Asn Ala Thr Leu Gln
    370                 375                 380

cag gag ggg gtc cac tgg tac tcc agg ctc ctg tat caa atg gga acg   1200
Gln Glu Gly Val His Trp Tyr Ser Arg Leu Leu Tyr Gln Met Gly Thr
385                 390                 395                 400

tgg ctt ttg gac agc aac atg ctt cat cct ttg ggg atg tca gta aac   1248
Trp Leu Leu Asp Ser Asn Met Leu His Pro Leu Gly Met Ser Val Asn
                405                 410                 415

tca agc tga                                                     1257
Ser Ser
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<210> 32
<211> 1425
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(1425)

<220>
<221> Modified_base
<222> (1387...1389)
<223> n=a, c, g, or t

<220>
<221> SITE
<222> (463)
<223> Xaa=unknown amino acid

<400> 32
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atg ctg ctg ctg gcg aga tgt ctg ctg cta gtc ctc gtc tcc tcg ctg   48
Met Leu Leu Leu Ala Arg Cys Leu Leu Leu Val Leu Val Ser Ser Leu
  1               5                  10                  15

ctg gta tgc tcg gga ctg gcg tgc gga ccg ggc agg ggg ttc ggg aag   96
Leu Val Cys Ser Gly Leu Ala Cys Gly Pro Gly Arg Gly Phe Gly Lys
             20                  25                  30

agg agg cac ccc aaa aag ctg acc cct tta gcc tac aag cag ttt atc   144
Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe Ile
         35                  40                  45

ccc aat gtg gcc gag aag acc cta ggc gcc agc gga agg tat gaa ggg   192
Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu Gly
     50                  55                  60

aag atc tcc aga aac tcc gag cga ttt aag gaa ctc acc ccc aat tac   240
Lys Ile Ser Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr
 65                  70                  75                  80

aac ccc gac atc ata ttt aag gat gaa gaa aac acc gga gcg gac agg   288
Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg
                 85                  90                  95

ctg atg act cag agg tgt aag gac aag ttg aac gct ttg gcc atc tcg   336
Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu Ala Ile Ser
            100                 105                 110

gtg atg aac cag tgg cca gga gtg aaa ctg cgg gtg acc gag ggc tgg   384
Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly Trp
        115                 120                 125

gac gaa gat ggc cac cac tca gag gag tct ctg cac tac gag ggc cgc   432
Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu Gly Arg
    130                 135                 140

gca gtg gac atc acc acg tct gac cgc gac cgc agc aag tac ggc atg   480
Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys Tyr Gly Met
145                 150                 155                 160

ctg gcc cgc ctg gcg gtg gag gcc ggc ttc gac tgg gtg tac tac gag   528
Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu
                165                 170                 175

tcc aag gca cat atc cac tgc tcg gtg aaa gca gag aac tcg gtg gcg   576
Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val Ala
            180                 185                 190

gcc aaa tcg gga ggc tgc ttc ccg ggc tcg gcc acg gtg cac ctg gag   624
Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val His Leu Glu
```

```
        195                 200                 205

cag ggc ggc acc aag ctg gtg aag gac ctg agc ccc ggg gac cgc gtg   672
Gln Gly Gly Thr Lys Leu Val Lys Asp Leu Ser Pro Gly Asp Arg Val
    210                 215                 220

ctg gcg gcg gac gac cag ggc cgg ctg ctc tac agc gac ttc ctc act   720
Leu Ala Ala Asp Asp Gln Gly Arg Leu Leu Tyr Ser Asp Phe Leu Thr
225                 230                 235                 240

ttc ctg gac cgc gac gac ggc gcc aag aag gtc ttc tac gtg atc gag   768
Phe Leu Asp Arg Asp Asp Gly Ala Lys Lys Val Phe Tyr Val Ile Glu
                245                 250                 255

acg cgg gag ccg cgc gag cgc ctg ctg ctc acc gcc gcg cac ctg ctc   816
Thr Arg Glu Pro Arg Glu Arg Leu Leu Leu Thr Ala Ala His Leu Leu
            260                 265                 270

ttt gtg gcg ccg cac aac gac tcg gcc acc ggg gag ccc gag gcg tcc   864
Phe Val Ala Pro His Asn Asp Ser Ala Thr Gly Glu Pro Glu Ala Ser
        275                 280                 285

tcg ggc tcg ggg ccg cct tcc ggg ggc gca ctg ggg cct cgg gcg ctg   912
Ser Gly Ser Gly Pro Pro Ser Gly Gly Ala Leu Gly Pro Arg Ala Leu
    290                 295                 300

ttc gcc agc cgc gtg cgc ccg ggc cag cgc gtg tac gtg gtg gcc gag   960
Phe Ala Ser Arg Val Arg Pro Gly Gln Arg Val Tyr Val Val Ala Glu
305                 310                 315                 320

cgt gac ggg gac cgc cgg ctc ctg ccc gcc gct gtg cac agc gtg acc   1008
Arg Asp Gly Asp Arg Arg Leu Leu Pro Ala Ala Val His Ser Val Thr
                325                 330                 335

cta agc gag gag gcc gcg ggc gcc tac gcg ccg ctc acg gcc cag ggc   1056
Leu Ser Glu Glu Ala Ala Gly Ala Tyr Ala Pro Leu Thr Ala Gln Gly
            340                 345                 350

acc att ctc atc aac cgg gtg ctg gcc tcg tgc tac gcg gtc atc gag   1104
Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys Tyr Ala Val Ile Glu
        355                 360                 365

gag cac agc tgg gcg cac cgg gcc ttc gcg ccc ttc cgc ctg gcg cac   1152
Glu His Ser Trp Ala His Arg Ala Phe Ala Pro Phe Arg Leu Ala His
    370                 375                 380

gcg ctc ctg gct gca ctg gcg ccc gcg cgc acg gac cgc ggc ggg gac   1200
Ala Leu Leu Ala Ala Leu Ala Pro Ala Arg Thr Asp Arg Gly Gly Asp
385                 390                 395                 400

agc ggc ggc ggg gac cgc ggg ggc ggc ggc ggc aga gta gcc cta acc   1248
Ser Gly Gly Gly Asp Arg Gly Gly Gly Gly Gly Arg Val Ala Leu Thr
                405                 410                 415

gct cca ggt gct gcc gac gct ccg ggt gcg ggg gcc acc gcg ggc atc   1296
Ala Pro Gly Ala Ala Asp Ala Pro Gly Ala Gly Ala Thr Ala Gly Ile
            420                 425                 430
```

```
cac tgg tac tcg cag ctg ctc tac caa ata ggc acc tgg ctc ctg gac   1344
His Trp Tyr Ser Gln Leu Leu Tyr Gln Ile Gly Thr Trp Leu Leu Asp
        435                 440                 445

agc gag gcc ctg cac ccg ctg ggc atg gcg gtc aag tcc agc nnn agc   1392
Ser Glu Ala Leu His Pro Leu Gly Met Ala Val Lys Ser Ser Xaa Ser
    450                 455                 460

cgg ggg gcc ggg gga ggg gcg cgg gag ggg gcc                       1425
Arg Gly Ala Gly Gly Gly Ala Arg Glu Gly Ala
465                 470                 475

<210> 33
<211> 939
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(939)

<400> 33
cgg cgc ctc atg acc cag cgc tgc aag gac cgc ctg aac tcg ctg gct   48
Arg Arg Leu Met Thr Gln Arg Cys Lys Asp Arg Leu Asn Ser Leu Ala
  1               5                  10                  15

atc tcg gtg atg aac cag tgg ccc ggt gtg aag ctg cgg gtg acc gag   96
Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr Glu
             20                  25                  30

ggc tgg gac gag gac ggc cac cac tca gag gag tcc ctg cat tat gag   144
Gly Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu
         35                  40                  45

ggc cgc gcg gtg gac atc acc aca tca gac cgc gac cgc aat aag tat   192
Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys Tyr
     50                  55                  60

gga ctg ctg gcg cgc ttg gca gtg gag gcc ggc ttt gac tgg gtg tat   240
Gly Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr
 65                  70                  75                  80

tac gag tca aag gcc cac gtg cat tgc tcc gtc aag tcc gag cac tcg   288
Tyr Glu Ser Lys Ala His Val His Cys Ser Val Lys Ser Glu His Ser
                 85                  90                  95

gcc gca gcc aag acg ggc ggc tgc ttc cct gcc gga gcc cag gta cgc   336
Ala Ala Ala Lys Thr Gly Gly Cys Phe Pro Ala Gly Ala Gln Val Arg
            100                 105                 110

ctg gag agt ggg gcg cgt gtg gcc ttg tca gcc gtg agg ccg gga gac   384
Leu Glu Ser Gly Ala Arg Val Ala Leu Ser Ala Val Arg Pro Gly Asp
        115                 120                 125

cgt gtg ctg gcc atg ggg gag gat ggg agc ccc acc ttc agc gat gtg   432
Arg Val Leu Ala Met Gly Glu Asp Gly Ser Pro Thr Phe Ser Asp Val
```

```
    130                 135                 140

ctc att ttc ctg gac cgc gag ccc cac agg ctg aga gcc ttc cag gtc   480
Leu Ile Phe Leu Asp Arg Glu Pro His Arg Leu Arg Ala Phe Gln Val
145                 150                 155                 160

atc gag act cag gac ccc cca cgc cgc ctg gca ctc aca ccc gct cac   528
Ile Glu Thr Gln Asp Pro Pro Arg Arg Leu Ala Leu Thr Pro Ala His
                165                 170                 175

ctg ctc ttt acg gct gac aat cac acg gag ccg gca gcc cgc ttc cgg   576
Leu Leu Phe Thr Ala Asp Asn His Thr Glu Pro Ala Ala Arg Phe Arg
            180                 185                 190

gcc aca ttt gcc agc cac gtg cag cct ggc cag tac gtg ctg gtg gct   624
Ala Thr Phe Ala Ser His Val Gln Pro Gly Gln Tyr Val Leu Val Ala
        195                 200                 205

ggg gtg cca ggc ctg cag cct gcc cgc gtg gca gct gtc tct aca cac   672
Gly Val Pro Gly Leu Gln Pro Ala Arg Val Ala Ala Val Ser Thr His
    210                 215                 220

gtg gcc ctc ggg gcc tac gcc ccg ctc aca aag cat ggg aca ctg gtg   720
Val Ala Leu Gly Ala Tyr Ala Pro Leu Thr Lys His Gly Thr Leu Val
225                 230                 235                 240

gtg gag gat gtg gtg gca tcc tgc ttc gcg gcc gtg gct gac cac cac   768
Val Glu Asp Val Val Ala Ser Cys Phe Ala Ala Val Ala Asp His His
                245                 250                 255

ctg gct cag ttg gcc ttc tgg ccc ctg aga ctc ttt cac agc ttg gca   816
Leu Ala Gln Leu Ala Phe Trp Pro Leu Arg Leu Phe His Ser Leu Ala
            260                 265                 270

tgg ggc agc tgg acc ccg ggg gag ggt gtg cat tgg tac ccc cag ctg   864
Trp Gly Ser Trp Thr Pro Gly Glu Gly Val His Trp Tyr Pro Gln Leu
        275                 280                 285

ctc tac cgc ctg ggg cgt ctc ctg cta gaa gag ggc agc ttc cac cca   912
Leu Tyr Arg Leu Gly Arg Leu Leu Leu Glu Glu Gly Ser Phe His Pro
    290                 295                 300

ctg ggc atg tcc ggg gca ggg agc tga                               939
Leu Gly Met Ser Gly Ala Gly Ser
305                 310

<210> 34
<211> 425
<212> PRT
<213> Gallus gallus

<400> 34
Met Val Glu Met Leu Leu Leu Thr Arg Ile Leu Leu Val Gly Phe Ile
  1               5                  10                  15

Cys Ala Leu Leu Val Ser Ser Gly Leu Thr Cys Gly Pro Gly Arg Gly
             20                  25                  30
```

E

Ile Gly Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys
35 40 45

Gln Phe Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg
50 55 60

Tyr Glu Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr
65 70 75 80

Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly
85 90 95

Ala Asp Arg Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu
100 105 110

Ala Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr
115 120 125

Glu Gly Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr
130 135 140

Glu Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys
145 150 155 160

Tyr Gly Met Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val
165 170 175

Tyr Tyr Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn
180 185 190

Ser Val Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val
195 200 205

His Leu Glu His Gly Gly Thr Lys Leu Val Lys Asp Leu Ser Pro Gly
210 215 220

Asp Arg Val Leu Ala Ala Asp Ala Asp Gly Arg Leu Leu Tyr Ser Asp
225 230 235 240

Phe Leu Thr Phe Leu Asp Arg Met Asp Ser Ser Arg Lys Leu Phe Tyr
245 250 255

Val Ile Glu Thr Arg Gln Pro Arg Ala Arg Leu Leu Leu Thr Ala Ala
260 265 270

His Leu Leu Phe Val Ala Pro Gln His Asn Gln Ser Glu Ala Thr Gly
275 280 285

Ser Thr Ser Gly Gln Ala Leu Phe Ala Ser Asn Val Lys Pro Gly Gln
290 295 300

Arg Val Tyr Val Leu Gly Glu Gly Gly Gln Gln Leu Leu Pro Ala Ser
305 310 315 320

Val His Ser Val Ser Leu Arg Glu Glu Ala Ser Gly Ala Tyr Ala Pro
325 330 335

Leu Thr Ala Gln Gly Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys
340 345 350

Tyr Ala Val Ile Glu Glu His Ser Trp Ala His Trp Ala Phe Ala Pro
355 360 365

Phe Arg Leu Ala Gln Gly Leu Leu Ala Ala Leu Cys Pro Asp Gly Ala
370 375 380

Ile Pro Thr Ala Ala Thr Thr Thr Thr Gly Ile His Trp Tyr Ser Arg
385 390 395 400

Leu Leu Tyr Arg Ile Gly Ser Trp Val Leu Asp Gly Asp Ala Leu His
405 410 415

Pro Leu Gly Met Val Ala Pro Ala Ser
420 425

<210> 35
<211> 396
<212> PRT
<213> Mus musculus

<400> 35
Met Ala Leu Pro Ala Ser Leu Leu Pro Leu Cys Cys Leu Ala Leu Leu
1 5 10 15

Ala Leu Ser Ala Gln Ser Cys Gly Pro Gly Arg Gly Pro Val Gly Arg
20 25 30

Arg Arg Tyr Val Arg Lys Gln Leu Val Pro Leu Leu Tyr Lys Gln Phe
35 40 45

Val Pro Ser Met Pro Glu Arg Thr Leu Gly Ala Ser Gly Pro Ala Glu
50 55 60

Gly Arg Val Thr Arg Gly Ser Glu Arg Phe Arg Asp Leu Val Pro Asn
65 70 75 80

Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Ser Gly Ala Asp
85 90 95

Arg Leu Met Thr Glu Arg Cys Lys Glu Arg Val Asn Ala Leu Ala Ile
100 105 110

Ala Val Met Asn Met Trp Pro Gly Val Arg Leu Arg Val Thr Glu Gly
115 120 125

Trp Asp Glu Asp Gly His His Ala Gln Asp Ser Leu His Tyr Glu Gly
130 135 140

Arg Ala Leu Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys Tyr Gly
145 150 155 160

Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr

```
                165                 170                 175

Glu Ser Arg Asn His Ile His Val Ser Val Lys Ala Asp Asn Ser Leu
            180                 185                 190

Ala Val Arg Ala Gly Gly Cys Phe Pro Gly Asn Ala Thr Val Arg Leu
        195                 200                 205

Arg Ser Gly Glu Arg Lys Gly Leu Arg Glu Leu His Arg Gly Asp Trp
    210                 215                 220

Val Leu Ala Ala Asp Ala Ala Gly Arg Val Val Pro Thr Pro Val Leu
225                 230                 235                 240

Leu Phe Leu Asp Arg Asp Leu Gln Arg Arg Ala Ser Phe Val Ala Val
                245                 250                 255

Glu Thr Glu Arg Pro Pro Arg Lys Leu Leu Leu Thr Pro Trp His Leu
            260                 265                 270

Val Phe Ala Ala Arg Gly Pro Ala Pro Ala Pro Gly Asp Phe Ala Pro
        275                 280                 285

Val Phe Ala Arg Arg Leu Arg Ala Gly Asp Ser Val Leu Ala Pro Gly
    290                 295                 300

Gly Asp Ala Leu Gln Pro Ala Arg Val Ala Arg Val Ala Arg Glu Glu
305                 310                 315                 320

Ala Val Gly Val Phe Ala Pro Leu Thr Ala His Gly Thr Leu Leu Val
                325                 330                 335

Asn Asp Val Leu Ala Ser Cys Tyr Ala Val Leu Glu Ser His Gln Trp
            340                 345                 350

Ala His Arg Ala Phe Ala Pro Leu Arg Leu Leu His Ala Leu Gly Ala
        355                 360                 365

Leu Leu Pro Gly Gly Ala Val Gln Pro Thr Gly Met His Trp Tyr Ser
    370                 375                 380

Arg Leu Leu Tyr Arg Leu Ala Glu Glu Leu Met Gly
385                 390                 395

<210> 36
<211> 336
<212> PRT
<213> Mus musculus

<400> 36
Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr Asn Pro Asp Ile Ile Phe
  1               5                  10                  15

Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg Leu Met Thr Gln Arg Cys
             20                  25                  30

Lys Asp Arg Leu Asn Ser Leu Ala Ile Ser Val Met Asn Gln Trp Pro
```

```
         35                  40                  45

Gly Val Lys Leu Arg Val Thr Glu Gly Trp Asp Glu Asp Gly His His
     50                  55                  60

Ser Glu Glu Ser Leu His Tyr Glu Gly Arg Ala Val Asp Ile Thr Thr
 65                  70                  75                  80

Ser Asp Arg Asp Arg Asn Lys Tyr Gly Leu Leu Ala Arg Leu Ala Val
                 85                  90                  95

Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu Ser Lys Ala His Val His
            100                 105                 110

Cys Ser Val Lys Ser Glu His Ser Ala Ala Ala Lys Thr Gly Gly Cys
        115                 120                 125

Phe Pro Ala Gly Ala Gln Val Arg Leu Glu Asn Gly Glu Arg Val Ala
    130                 135                 140

Leu Ser Ala Val Lys Pro Gly Asp Arg Val Leu Ala Met Gly Glu Asp
145                 150                 155                 160

Gly Thr Pro Thr Phe Ser Asp Val Leu Ile Phe Leu Asp Arg Glu Pro
                165                 170                 175

Asn Arg Leu Arg Ala Phe Gln Val Ile Glu Thr Gln Asp Pro Pro Arg
            180                 185                 190

Arg Leu Ala Leu Thr Pro Ala His Leu Leu Phe Ile Ala Asp Asn His
        195                 200                 205

Thr Glu Pro Ala Ala His Phe Arg Ala Thr Phe Ala Ser His Val Gln
    210                 215                 220

Pro Gly Gln Tyr Val Leu Val Ser Gly Val Pro Gly Leu Gln Pro Ala
225                 230                 235                 240

Arg Val Ala Ala Val Ser Thr His Val Ala Leu Gly Ser Tyr Ala Pro
                245                 250                 255

Leu Thr Arg His Gly Thr Leu Val Val Glu Asp Val Val Ala Ser Cys
            260                 265                 270

Phe Ala Ala Val Ala Asp His His Leu Ala Gln Leu Ala Phe Trp Pro
        275                 280                 285

Leu Arg Leu Phe Pro Ser Leu Ala Trp Gly Ser Trp Thr Pro Ser Glu
    290                 295                 300

Gly Val His Trp Tyr Pro Gln Met Leu Tyr Arg Leu Gly Arg Leu Leu
305                 310                 315                 320

Leu Glu Glu Ser Thr Phe His Pro Leu Gly Met Ser Gly Ala Gly Ser
                325                 330                 335
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<210> 37

<211> 437
<212> PRT
<213> Mus musculus

<400> 37

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Met Leu Leu Leu Leu Ala Arg Cys Phe Leu Val Ile Leu Ala Ser Ser
  1               5                  10                  15

Leu Leu Val Cys Pro Gly Leu Ala Cys Gly Pro Gly Arg Gly Phe Gly
             20                  25                  30

Lys Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe
         35                  40                  45

Ile Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu
     50                  55                  60

Gly Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn
 65                  70                  75                  80

Tyr Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp
                 85                  90                  95

Arg Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu Ala Ile
            100                 105                 110

Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly
        115                 120                 125

Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu Gly
    130                 135                 140

Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys Tyr Gly
145                 150                 155                 160

Met Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr
                165                 170                 175

Glu Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val
            180                 185                 190

Ala Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val His Leu
        195                 200                 205

Glu Gln Gly Gly Thr Lys Leu Val Lys Asp Leu Arg Pro Gly Asp Arg
    210                 215                 220

Val Leu Ala Ala Asp Asp Gln Gly Arg Leu Leu Tyr Ser Asp Phe Leu
225                 230                 235                 240

Thr Phe Leu Asp Arg Asp Glu Gly Ala Lys Lys Val Phe Tyr Val Ile
                245                 250                 255

Glu Thr Leu Glu Pro Arg Glu Arg Leu Leu Leu Thr Ala Ala His Leu
            260                 265                 270

Leu Phe Val Ala Pro His Asn Asp Ser Gly Pro Thr Pro Gly Pro Ser
```

```
        275                 280                 285

Ala Leu Phe Ala Ser Arg Val Arg Pro Gly Gln Arg Val Tyr Val Val
    290                 295                 300

Ala Glu Arg Gly Gly Asp Arg Arg Leu Leu Pro Ala Ala Val His Ser
305                 310                 315                 320

Val Thr Leu Arg Glu Glu Glu Ala Gly Ala Tyr Ala Pro Leu Thr Ala
                325                 330                 335

His Gly Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys Tyr Ala Val
            340                 345                 350

Ile Glu Glu His Ser Trp Ala His Arg Ala Phe Ala Pro Phe Arg Leu
        355                 360                 365

Ala His Ala Leu Leu Ala Ala Leu Ala Pro Ala Arg Thr Asp Gly Gly
    370                 375                 380

Gly Gly Gly Ser Ile Pro Ala Ala Gln Ser Ala Thr Glu Ala Arg Gly
385                 390                 395                 400

Ala Glu Pro Thr Ala Gly Ile His Trp Tyr Ser Gln Leu Leu Tyr His
                405                 410                 415

Ile Gly Thr Trp Leu Leu Asp Ser Glu Thr Met His Pro Leu Gly Met
            420                 425                 430

Ala Val Lys Ser Ser
        435

<210> 38
<211> 418
<212> PRT
<213> Brachydanio rerio

<400> 38
Met Arg Leu Leu Thr Arg Val Leu Leu Val Ser Leu Leu Thr Leu Ser
  1               5                  10                  15

Leu Val Val Ser Gly Leu Ala Cys Gly Pro Gly Arg Gly Tyr Gly Arg
             20                  25                  30

Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe Ile
         35                  40                  45

Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu Gly
     50                  55                  60

Lys Ile Thr Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr
 65                  70                  75                  80

Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg
                 85                  90                  95

Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ser Leu Ala Ile Ser
```

```
            100                 105                 110

Val Met Asn His Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly Trp
        115                 120                 125

Asp Glu Asp Gly His His Phe Glu Glu Ser Leu His Tyr Glu Gly Arg
    130                 135                 140

Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Lys Ser Lys Tyr Gly Thr
145                 150                 155                 160

Leu Ser Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu
                165                 170                 175

Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val Ala
            180                 185                 190

Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Leu Val Ser Leu Gln
        195                 200                 205

Asp Gly Gly Gln Lys Ala Val Lys Asp Leu Asn Pro Gly Asp Lys Val
    210                 215                 220

Leu Ala Ala Asp Ser Ala Gly Asn Leu Val Phe Ser Asp Phe Ile Met
225                 230                 235                 240

Phe Thr Asp Arg Asp Ser Thr Thr Arg Arg Val Phe Tyr Val Ile Glu
                245                 250                 255

Thr Gln Glu Pro Val Glu Lys Ile Thr Leu Thr Ala Ala His Leu Leu
            260                 265                 270

Phe Val Leu Asp Asn Ser Thr Glu Asp Leu His Thr Met Thr Ala Ala
        275                 280                 285

Tyr Ala Ser Ser Val Arg Ala Gly Gln Lys Val Met Val Val Asp Asp
    290                 295                 300

Ser Gly Gln Leu Lys Ser Val Ile Val Gln Arg Ile Tyr Thr Glu Glu
305                 310                 315                 320

Gln Arg Gly Ser Phe Ala Pro Val Thr Ala His Gly Thr Ile Val Val
                325                 330                 335

Asp Arg Ile Leu Ala Ser Cys Tyr Ala Val Ile Glu Asp Gln Gly Leu
            340                 345                 350

Ala His Leu Ala Phe Ala Pro Ala Arg Leu Tyr Tyr Tyr Val Ser Ser
        355                 360                 365

Phe Leu Phe Pro Gln Asn Ser Ser Ser Arg Ser Asn Ala Thr Leu Gln
    370                 375                 380

Gln Glu Gly Val His Trp Tyr Ser Arg Leu Leu Tyr Gln Met Gly Thr
385                 390                 395                 400

Trp Leu Leu Asp Ser Asn Met Leu His Pro Leu Gly Met Ser Val Asn
```

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405 410 415

Ser Ser

<210> 39
<211> 475
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (463)
<223> Xaa=unknown amino acid

<400> 39

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Met Leu Leu Leu Ala Arg Cys Leu Leu Leu Val Leu Val Ser Ser Leu
  1               5                  10                  15

Leu Val Cys Ser Gly Leu Ala Cys Gly Pro Gly Arg Gly Phe Gly Lys
             20                  25                  30

Arg Arg His Pro Lys Lys Leu Thr Pro Leu Ala Tyr Lys Gln Phe Ile
         35                  40                  45

Pro Asn Val Ala Glu Lys Thr Leu Gly Ala Ser Gly Arg Tyr Glu Gly
     50                  55                  60

Lys Ile Ser Arg Asn Ser Glu Arg Phe Lys Glu Leu Thr Pro Asn Tyr
 65                  70                  75                  80

Asn Pro Asp Ile Ile Phe Lys Asp Glu Glu Asn Thr Gly Ala Asp Arg
                 85                  90                  95

Leu Met Thr Gln Arg Cys Lys Asp Lys Leu Asn Ala Leu Ala Ile Ser
            100                 105                 110

Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr Glu Gly Trp
        115                 120                 125

Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu Gly Arg
    130                 135                 140

Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Ser Lys Tyr Gly Met
145                 150                 155                 160

Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu
                165                 170                 175

Ser Lys Ala His Ile His Cys Ser Val Lys Ala Glu Asn Ser Val Ala
            180                 185                 190

Ala Lys Ser Gly Gly Cys Phe Pro Gly Ser Ala Thr Val His Leu Glu
        195                 200                 205

Gln Gly Gly Thr Lys Leu Val Lys Asp Leu Ser Pro Gly Asp Arg Val
    210                 215                 220
```

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```
Leu Ala Ala Asp Asp Gln Gly Arg Leu Leu Tyr Ser Asp Phe Leu Thr
225                 230                 235                 240

Phe Leu Asp Arg Asp Asp Gly Ala Lys Lys Val Phe Tyr Val Ile Glu
                245                 250                 255

Thr Arg Glu Pro Arg Glu Arg Leu Leu Leu Thr Ala Ala His Leu Leu
            260                 265                 270

Phe Val Ala Pro His Asn Asp Ser Ala Thr Gly Glu Pro Glu Ala Ser
        275                 280                 285

Ser Gly Ser Gly Pro Pro Ser Gly Gly Ala Leu Gly Pro Arg Ala Leu
    290                 295                 300

Phe Ala Ser Arg Val Arg Pro Gly Gln Arg Val Tyr Val Val Ala Glu
305                 310                 315                 320

Arg Asp Gly Asp Arg Arg Leu Leu Pro Ala Ala Val His Ser Val Thr
                325                 330                 335

Leu Ser Glu Glu Ala Ala Gly Ala Tyr Ala Pro Leu Thr Ala Gln Gly
            340                 345                 350

Thr Ile Leu Ile Asn Arg Val Leu Ala Ser Cys Tyr Ala Val Ile Glu
        355                 360                 365

Glu His Ser Trp Ala His Arg Ala Phe Ala Pro Phe Arg Leu Ala His
    370                 375                 380

Ala Leu Leu Ala Ala Leu Ala Pro Ala Arg Thr Asp Arg Gly Gly Asp
385                 390                 395                 400

Ser Gly Gly Gly Asp Arg Gly Gly Gly Gly Gly Arg Val Ala Leu Thr
                405                 410                 415

Ala Pro Gly Ala Ala Asp Ala Pro Gly Ala Gly Ala Thr Ala Gly Ile
            420                 425                 430

His Trp Tyr Ser Gln Leu Leu Tyr Gln Ile Gly Thr Trp Leu Leu Asp
        435                 440                 445

Ser Glu Ala Leu His Pro Leu Gly Met Ala Val Lys Ser Ser Xaa Ser
    450                 455                 460

Arg Gly Ala Gly Gly Gly Ala Arg Glu Gly Ala
465                 470                 475

<210> 40
<211> 312
<212> PRT
<213> Homo sapiens

<400> 40
Arg Arg Leu Met Thr Gln Arg Cys Lys Asp Arg Leu Asn Ser Leu Ala
  1               5                  10                  15
```

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Ile Ser Val Met Asn Gln Trp Pro Gly Val Lys Leu Arg Val Thr Glu
            20                  25                  30
Gly Trp Asp Glu Asp Gly His His Ser Glu Glu Ser Leu His Tyr Glu
        35                  40                  45
Gly Arg Ala Val Asp Ile Thr Thr Ser Asp Arg Asp Arg Asn Lys Tyr
    50                  55                  60
Gly Leu Leu Ala Arg Leu Ala Val Glu Ala Gly Phe Asp Trp Val Tyr
65                  70                  75                  80
Tyr Glu Ser Lys Ala His Val His Cys Ser Val Lys Ser Glu His Ser
                85                  90                  95
Ala Ala Ala Lys Thr Gly Gly Cys Phe Pro Ala Gly Ala Gln Val Arg
            100                 105                 110
Leu Glu Ser Gly Ala Arg Val Ala Leu Ser Ala Val Arg Pro Gly Asp
        115                 120                 125
Arg Val Leu Ala Met Gly Glu Asp Gly Ser Pro Thr Phe Ser Asp Val
    130                 135                 140
Leu Ile Phe Leu Asp Arg Glu Pro His Arg Leu Arg Ala Phe Gln Val
145                 150                 155                 160
Ile Glu Thr Gln Asp Pro Pro Arg Arg Leu Ala Leu Thr Pro Ala His
                165                 170                 175
Leu Leu Phe Thr Ala Asp Asn His Thr Glu Pro Ala Ala Arg Phe Arg
            180                 185                 190
Ala Thr Phe Ala Ser His Val Gln Pro Gly Gln Tyr Val Leu Val Ala
        195                 200                 205
Gly Val Pro Gly Leu Gln Pro Ala Arg Val Ala Ala Val Ser Thr His
    210                 215                 220
Val Ala Leu Gly Ala Tyr Ala Pro Leu Thr Lys His Gly Thr Leu Val
225                 230                 235                 240
Val Glu Asp Val Val Ala Ser Cys Phe Ala Ala Val Ala Asp His His
                245                 250                 255
Leu Ala Gln Leu Ala Phe Trp Pro Leu Arg Leu Phe His Ser Leu Ala
            260                 265                 270
Trp Gly Ser Trp Thr Pro Gly Glu Gly Val His Trp Tyr Pro Gln Leu
        275                 280                 285
Leu Tyr Arg Leu Gly Arg Leu Leu Leu Glu Glu Gly Ser Phe His Pro
    290                 295                 300
Leu Gly Met Ser Gly Ala Gly Ser
305                 310
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<210> 41
<211> 167
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: General hedgehog polypeptide formula

<220>
<221> SITE
<222> (7)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Pro, Phe, or Tyr

<220>
<221> SITE
<222> (8)
<223> Xaa=Gly, Ala, Val, Leu, or Ile

<220>
<221> SITE
<222> (9)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Lys, His, or Arg

<220>
<221> SITE
<222> (12)
<223> Xaa=Lys, Arg or His

<220>
<221> SITE
<222> (13)
<223> Xaa=Phe, Trp, Tyr, or an amino acid gap

<220>
<221> SITE
<222> (14)
<223> Xaa=Gly, Ala, Val, Leu, Ile, or an amino acid gap

<220>
<221> SITE
<222> (17)
<223> Xaa=Asn, Gln, His, Arg, or Lys

<220>
<221> SITE
<222> (19)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, or Thr

<220>
<221> SITE
<222> (22)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, or Thr

<220>
<221> SITE
<222> (27)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, or Thr

<220>
<221> SITE
<222> (29)
<223> Xaa=Ser, Thr, Gln, or Asn

<220>
<221> SITE
<222> (30)
<223> Xaa=Met, Cys, Gly, Ala, Val, Leu, Ile, Ser, or Thr

<220>
<221> SITE
<222> (31)
<223> Xaa=Gly, Ala, Val, Leu, Ile, or Pro

<220>

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<221> SITE
<222> (33)
<223> Xaa=Arg, His or Lys

<220>
<221> SITE
<222> (40)
<223> Xaa=Gly, Ala, Val, Leu, Ile,Pro, Arg, His, or Lys

<220>
<221> SITE
<222> (41)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Phe, or Tyr

<220>
<221> SITE
<222> (44)
<223> Xaa=Arg, His or Lys

<220>
<221> SITE
<222> (45)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, or Thr

<220>
<221> SITE
<222> (46)
<223> Xaa=Thr or Ser

<220>
<221> SITE
<222> (48)
<223> Xaa=Ly, Ala, Val, Leu, Ile, Asn, or Gln

<220>
<221> SITE
<222> (53)
<223> Xaa=Arg, His or Lys

<220>
<221> SITE
<222> (54)
<223> Xaa=Asp or Glu

<220>
<221> SITE
<222> (71)
<223> Xaa=Ser or Thr

<220>
<221> SITE
<222> (79)
<223> Xaa=Glu, Asp, Gln, or Asn

<220>
<221> SITE
<222> (83)

<223> Xaa=Glu or Asp

<220>
<221> SITE
<222> (84)
<223> Xaa=Arg, His or Lys

<220>
<221> SITE
<222> (85)
<223> Xaa=Gly, Ala, Val, Leu, or Ile

<220>
<221> SITE
<222> (87)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Thr, or Ser

<220>
<221> SITE
<222> (95)
<223> Xaa=Met, Cys, Gln, Asn, Arg, Lys, or His

<220>
<221> SITE
<222> (100)
<223> Xaa=Arg, His or Lys

<220>
<221> SITE
<222> (107)
<223> Xaa=Trp, Phe, Tyr, Arg, His, or Lys

<220>
<221> SITE
<222> (114)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, Thr, Tyr, or Phe

<220>
<221> SITE
<222> (115)
<223> Xaa=Gln, Asn, Asp, or Glu

<220>
<221> SITE
<222> (116)
<223> Xaa=Asp or Glu

<220>
<221> SITE
<222> (125)
<223> Xaa=Gly, Ala, Val, Leu, or Ile

<220>
<221> SITE
<222> (134)
<223> Xaa=Arg, His or Lys

<220>
<221> SITE
<222> (135)
<223> Xaa=Asn, Gln, Thr, or Ser

<220>
<221> SITE
<222> (139)
<223> Xaa=Gly, Ala, Val, Lau, Ile, Ser, Thr, Met, or Cys

<220>
<221> SITE
<222> (141)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Thr, or Ser

<220>
<221> SITE
<222> (157)
<223> Xaa=Arg, His or Lys

<220>
<221> SITE
<222> (158)
<223> Xaa=Asn Gln, Gly, Ala, Val, Leu, or Ile

<220>
<221> SITE
<222> (160)
<223> Xaa=Gly, Ala, Val, Leu, or Ile

<220>
<221> SITE
<222> (162)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, Thr, or Cys

<220>
<221> SITE
<222> (166)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Thr, or Ser

<220>
<221> SITE
<222> (167)
<223> Xaa=Asp or Glu

<400> 41
Cys Gly Pro Gly Arg Gly Xaa Xaa Xaa Arg Arg Xaa Xaa Xaa Pro Lys
1 5 10 15

Xaa Leu Xaa Pro Leu Xaa Tyr Lys Gln Phe Xaa Pro Xaa Xaa Xaa Glu
20 25 30

Xaa Thr Leu Gly Ala Ser Gly Xaa Xaa Glu Gly Xaa Xaa Xaa Arg Xaa
35 40 45

Ser Glu Arg Phe Xaa Xaa Leu Thr Pro Asn Tyr Asn Pro Asp Ile Ile
50 55 60

Phe Lys Asp Glu Glu Asn Xaa Gly Ala Asp Arg Leu Met Thr Xaa Arg
65 70 75 80

Cys Lys Xaa Xaa Xaa Asn Xaa Leu Ala Ile Ser Val Met Asn Xaa Trp
85 90 95

Pro Gly Val Xaa Leu Arg Val Thr Glu Gly Xaa Asp Glu Asp Gly His
100 105 110

His Xaa Xaa Xaa Ser Leu His Tyr Glu Gly Arg Ala Xaa Asp Ile Thr
115 120 125

Thr Ser Asp Arg Asp Xaa Xaa Lys Tyr Gly Xaa Leu Xaa Arg Leu Ala
130 135 140

Val Glu Ala Gly Phe Asp Trp Val Tyr Tyr Glu Ser Xaa Xaa His Xaa
145 150 155 160

His Xaa Ser Val Lys Xaa Xaa
165

<210> 42
<211> 165
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: General Shh polypeptide formula

<220>
<221> SITE
<222> (7)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Phe, Tyr, or Trp

<220>
<221> SITE
<222> (9)
<223> Xaa=Arg, His or Lys

<220>
<221> SITE
<222> (44)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, or Thr

<220>
<221> SITE
<222> (85)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, or Thr

<220>
<221> SITE
<222> (93)
<223> Xaa=Lys, Arg, His, Asn, or Gln

<220>
<221> SITE
<222> (98)
<223> Xaa=Lys, Arg or His

<220>
<221> SITE
<222> (112)
<223> Xaa=Ser, thr, Tyr, Trp, or Phe

<220>
<221> SITE
<222> (132)
<223> Xaa=Lys, Arg, or His

<220>
<221> SITE
<222> (137)
<223> Xaa=Met, Cys, Ser, or Thr

<220>
<221> SITE
<222> (139)
<223> Xaa=Gly, Ala, Val, Leu, Ile, Ser, or Thr

<400> 42

```
Cys Gly Pro Gly Arg Gly Xaa Gly Xaa Arg Arg His Pro Lys Lys Leu
  1               5                  10                  15

Thr Pro Leu Ala Tyr Lys Gln Phe Ile Pro Asn Val Ala Glu Lys Thr
             20                  25                  30

Leu Gly Ala Ser Gly Arg Tyr Glu Gly Lys Ile Xaa Arg Asn Ser Glu
         35                  40                  45

Arg Phe Lys Glu Leu Thr Pro Asn Tyr Asn Pro Asp Ile Ile Phe Lys
     50                  55                  60

Asp Glu Glu Asn Thr Gly Ala Asp Arg Leu Met Thr Gln Arg Cys Lys
 65                  70                  75                  80

Asp Lys Leu Asn Xaa Leu Ala Ile Ser Val Met Asn Xaa Trp Pro Gly
                 85                  90                  95

Val Xaa Leu Arg Val Thr Glu Gly Trp Asp Glu Asp Gly His His Xaa
            100                 105                 110

Glu Glu Ser Leu His Tyr Glu Gly Arg Ala Val Asp Ile Thr Thr Ser
        115                 120                 125

Asp Arg Asp Xaa Ser Lys Tyr Gly Xaa Leu Xaa Arg Leu Ala Val Glu
    130                 135                 140

Ala Gly Phe Asp Trp Val Tyr Tyr Glu Ser Lys Ala His Ile His Cys
145                 150                 155                 160

Ser Val Lys Ala Glu
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Cont

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